

# USER MANUAL

## CAVESYSTEMS™

Container And Volume Engineering Systems



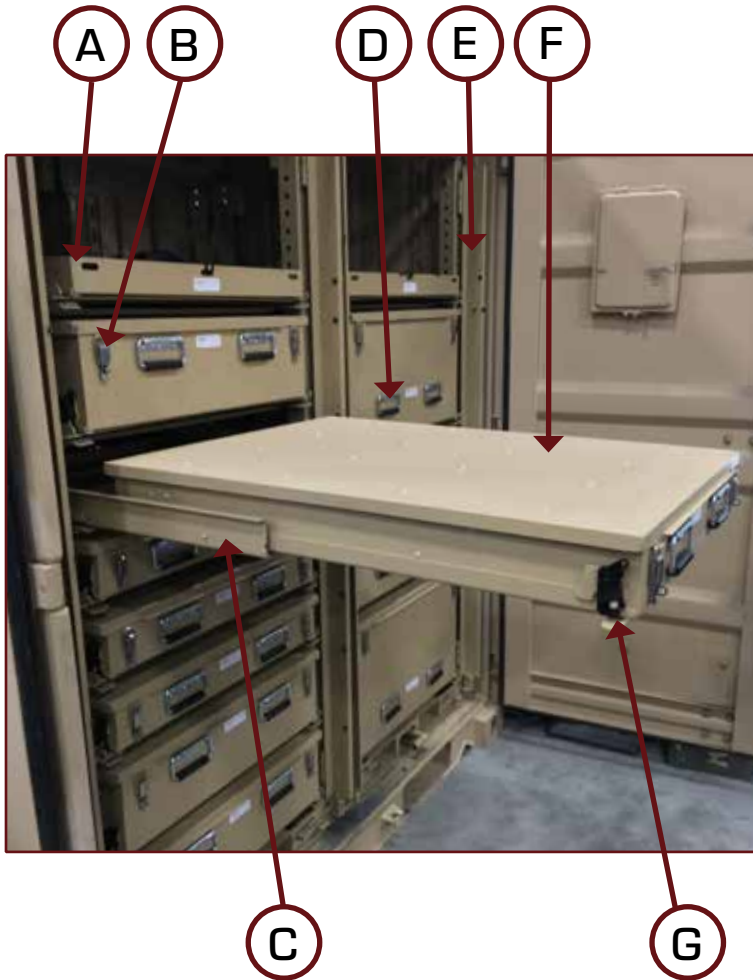


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# System Overview



A	Bulk Tray	H	Bolt for securing Gate
B	Drawer Latch	I	Shot Bolt
C	Slide Mechanism	J	Fork Pocket
D	Spring Tension Handle	K	Cargo Net
E	Gate	L	Glide-Out Shelf
F	Drawer/StackaBox	M	Full Width Removable Unit
G	Slam Latch (StackaBox Only)	N	Shelf Securing Latch



# System Access

1. On both the left and right hand sides of each system are a set of gates. These need to be fully opened to gain access to the drawers or shelves. The gates are intentionally stiff so when in use they do not close of their own accord (Figures 1 & 2 Show the gates closed and open respectively).

2. To open the gates the bolts at the top and bottom need to be released (Figure 3). These are used to secure the drawers and shelving when not in use. The bolts are spring loaded and need to be moved to the open position before opening the gates. These bolts have holes into which standard military use padlocks can be fitted.

3. Gates must be closed and bolted before transit to ensure the drawers/shelves do not move. Additionally, the container doors will not be able to close unless the gates are shut.

Fig 1



Fig 2



Fig 3





# Drawers

1. Cave Systems provides 5 different height drawers, the width and length of each is specific to the type of container being used. The Drawers slide out 100% (Figure 4) and should be pulled using both handles on the front in a smooth constant motion.

2. All Drawers come with partitions and dividers, (Figure 4) the dividers can be adjusted to create varying length compartments. Adjusting the divider is achieved by lifting it out of it's slot and replacing it in an alternate. (Other inserts such as foam or hazmat can be provided upon request)

3. The slide mechanism (Figure 5) is a two stage system which supports the load in the horizontal plane. Sliding action is achieved by the metal base moving over oil impregnated UHMD polyethylene. The heavier the load the more lubricant is released, achieving a uniform ease of motion. The oil is instantly reabsorbed after every motion allowing for self-cleaning and self-lubrication. There are no moving parts. Loads up to 500lbs can be held by these drawers due to the support being in the horizontal plane.



Fig 4



Fig 5





# StackaBoxes

1. StackaBoxes are Drawers which can be removed from the slide and taken to point of use. To remove the StackaBox from its slide, it needs to be extended to approximately 90%. At this point push the top of the Slam Latch (shown in Figure 7) away from you and pull the StackaBox past the 100% extension point while still holding the Slam Latch open.



Fig 6



Fig 7

Figure 8 shows the StackaBox fully removed from the slide

2. To replace the StackaBox simply pull the slide back out to the 100% extension position and place the StackaBox onto the slide. Push the box all the way back into the fully closed position. The latch will reengage securing the StackaBox safely back into the system.

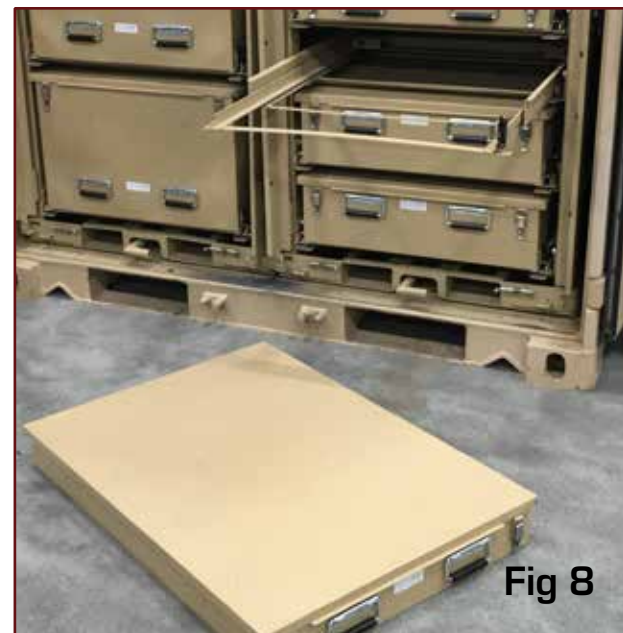


Fig 8

3. Lids are an option for Drawers, however, lids are standard with a StackaBox. All lids are fitted with a weatherproof gasket and gas struts to keep the lid open and prohibit it from slamming shut. (Figure 9)

A video guide can be found at:

<http://www.cavesystems.com/video.html>



Fig 9





# Glide-Out Shelves

Fig 10

1. Glide-Out Shelves can carry loads up to 2,250lbs and extend out either 70% as shown (Figure 10) or 100%. The shelf glides on 4 plated steel rollers. The force required to pull out a shelf loaded with 2,250lbs is only 56lbs

2. Each Glide-Out Shelf has a safety latch on the right hand side (Figure 11). To extend the shelf, this latch needs to be pushed down until the shelf is released. When the shelf reaches its maximum extension, the latch engages. This ensures the shelf does not glide in of its own accord. To push the shelf back in, the latch needs to be released.

**Always pull & push from the middle and do not push back in without releasing the latch.**<sup>1</sup>

When the shelf has been pushed all the way in, the latch reengages.

3. Glide-Out Shelves come with a cargo net as standard to secure bulk items in transit. Ratchet straps can be substituted for the cargo net at no additional cost if indicated at the time of order.



Fig 11

<sup>1</sup> The rail system supporting the Glide-Out Shelf is designed to have a small amount of play to cope with the forces associated with transportation. As such it is important to always pull and push from the middle to avoid any inconvenience from racking the shelf.





# Bulk Trays

1. Bulk Trays are ideal for light bulk items. They have a maximum load capacity of 500lbs and extend 100% out of the system. (Figure 12) Like Drawers and StackaBoxes, Bulk trays utilize the same self-lubricated slide mechanism and therefore require no maintenance.
2. Bulk Trays come with a cargo net as standard to secure bulk items in transit. Ratchet straps can be substituted for the cargo net at no additional cost if indicated at the time of order.



Fig 12







# Removable Units

1. CAVE products can be installed in one of two ways:
  - Welding a dedicated framework (Spaceframe) into the container. This offers slightly more storage space and increased rigidity to the container.
  - Utilizing a Removable Unit which can be loaded and unloaded with the use of a fork-lift truck



Fig 13

2. To remove the Removable Unit: Pull out the shot bolt(s) at the bottom releasing the unit. Using a qualified fork lift driver, the unit can be lifted out of the container with a forklift (Figure 13). An empty Half Width Removable Unit with drawers weighs approximately 1,000lbs, a full width removable unit with glide out shelves weighs approximately 1,500lbs



Fig 14

3. To replace the Removable Unit, move the unit over the Adapter Plate (Figure 14) until approximately centered. (Note: the shot bolt must be disengaged.) Lower the unit and it will self-center. Engage the shot bolts securing the Removable Unit.



Fig 15





# Safety Guidelines

1. The following guidelines are for the safe use of ISU<sup>®</sup>90 and Tricon Half-Width Removable Units (Figure 16) and Quadcon Removable Units containing Drawers or Stackaboxes. These safety guidelines are the same whether the unit is secured inside the container or is outside the container. However if using outside the container it must be on a flat, level surface:

- Only open one drawer at a time.
- Do not climb on the drawers or use as a ladder or stair.
- If removing Stackaboxes, they should be removed one at a time from the top to the bottom.
- When replacing Stackaboxes, they should be replaced from the bottom up.





# Safety Guidelines

2. The following guidelines are for Removable Units containing Glide-Out Shelves:

- The unit must be secured using the shot bolt on the adapter plate to be safely used inside the container.
- The unit must be properly anchored to be safely used Outside the container and on a flat level surface. If intending to use this unit outside the container please contact [Cave Systems](#) so we can provide the anchoring system appropriate to your location and application.
- Only open one shelf at a time
- Do not climb on the shelves or use as a ladder





# Trouble Shooting

Issue	Likely Causes	Remedy
Drawers will not pull out	-Gates have not been opened properly	-Ensure gates on both left and right have been fully opened, see page 4
Gates will not close or bolt shut	-Drawers are not fully pushed back into removable unit.	-Ensure all drawers are seated properly and have been fully pushed back into the removable unit
Lids will not open	-Drawer is not fully extended or another drawer is interfering	-Drawer must be fully extended to properly open the lid and only one drawer should be extended at a time.
Stackabox will not lift out	-Slam latch not disengaged	-Follow instructions on page 6 to properly unload and load a stackabox
Glide out shelf will not slide out	-The gates have not been opened -The safety latch has not been disengaged	-Ensure gates on both left and right have been fully opened, see page 4. -Ensure safety latch has been pushed down see page 7
Glide Out Shelf will not push back in	-The safety latch has not been disengaged -The shelf has hitched from not pulling or pushing from the middle -The shelf has hitched from pushing it back in without releasing the safety latch	-Ensure safety latch has been pushed down see page 7 -Realign the shelf on its rails and push or pull with two hands from the center. -Realign the shelf on its rails, release the safety latch and push back in with two hands from the center.
Shot Bolt securing removable unit will not disengage	-The Shot Bolts used to secure removable units in place are designed to fit snugly in order to limit movement. Through regular handling and transport they may occasionally become pinched and present more difficulty moving in or out	-Insert the forks of a fork truck and gently nudge the unit to one side. Then try the handle. If required, nudge the unit to the opposite side. Once in a centered position the handle should release and slide forward. Similar nudging maybe required to properly center a unit during re-installation.







# Trouble Shooting

Issue	Likely Causes	Remedy
<p>Removable Unit will not drop into place when being loaded by forklift</p>	<p>-The Shot Bolt is not fully disengaged. The Shot Bolts move freely with no Removable Unit in place and its possible to knock the bolt in slightly as the Removable Unit is being loaded or maneuvered into position.</p> <p>-The Shot Bolts are made of solid steel so even a slight engagement can prevent the Removable Unit from seating correctly. (Proper seating is easily identified as the Removable Unit will be sit flat on the container floor)</p>	<p>-Ensure the shot bolt is fully pulled out before loading the Removable Unit into the container.</p> <p>-Check again before you lower the Removable Unit into position in case the Shot Bolt moved as you lifted the Unit into position for lowering.</p>
<p>Shot Bolt securing removable unit will not engage</p>	<p>-The Shot Bolts used to secure removable units in place are designed to fit snugly in order to limit movement. They may occasionally become pinched and present more difficulty moving in or out.</p>	<p>-Using the forks of a fork truck, gently nudge the unit to one side. Then try the handle. If required, nudge the unit to the opposite side. Once in a centered position the handle should slide into position.</p>






# Hazards & Warnings

	<p>Tip Hazard</p> <p>Risk of Injury or Fatality</p>	<p>Removable Units can tip and must only be operated following the Safety Guidelines given in this User Manual.</p> <p>Only Open one drawer/shelf at a time and always observe the weight limits.</p>
	<p>No Climbing Warning</p> <p>Risk of Injury or Fatality</p>	<p>At no time should Drawers, Shelves, Stacka-Boxes or Trays be climbed on.</p> <p>This could result in serious injury or Death.</p> <p>Always use safety steps to reach higher placed items. It is also recommended heavier objects are stored lower down where more easily accessible.</p>
	<p>Body Crush Hazard</p> <p>Risk of Injury or Fatality</p>	<p>To prevent injury, ensure system is on a flat even surface and that there is enough room behind you when a shelf/drawer is fully extended to avoid injury.</p> <p>Weight Limits must always be observed. Gates must be closed and bolted when not in use or in transit</p>
	<p>Heavy Object Warning</p> <p>Risk of Injury</p>	<p>Two Person Lift required when removing or replacing StackaBoxes as they weigh 100lbs empty, with loads over 250lbs a 4-man lift is recommended.</p> <p>Load capacity limits must always be observed.</p>



# Safety & Hazards

	<p>Foot Crush Hazard</p> <p>Risk of Injury</p>	<p>StackaBoxes weigh 100lbs empty and could cause significant injury if dropped</p>
	<p>Pinch Point Hazard</p> <p>Risk of Injury</p>	<p>Keep hands clear of moving parts when opening or closing Drawers, StackaBoxes, Bulk Trays or Glide-Out Shelves.</p> <p>Wear safety gloves</p>
	<p>Open one drawer or shelf at a time</p> <p>Ignoring Advice Increases Tip Hazard</p>	<p>Opening multiple drawers or shelves at once increases chance of tipping and risk of injury.</p>

**For more information call 877-344-CAVE (2283) or visit [www.cavesystems.com](http://www.cavesystems.com)**